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UTILITY		Attorney Docket No.	102055-0008P1
PATENT APPLICATION		First Inventor or Application Identifier	Paul Andrew Cronk
TRANSMITTAL (Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))		Title	ADJUSTABLE REFLECTOR DEVICE
		Express Mail Label No.	EL056798127US

APPLICATION ELEMENTS See MPEP chapter 600 concerning utility application contents		Assistant Commissioner for Patents Box Patent Application Washington, DC 20231
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<input checked="" type="checkbox"/> *Fee Transmittal Form (e.g., PTO/SB/17) <i>(Submit an original and a duplicate for fee processing)</i>		<input type="checkbox"/> Microfiche Computer Program (Appendix) 7. Nucleotide and/or Amino Acid Sequence Sequence Submission <i>(if applicable, all necessary)</i> <ol style="list-style-type: none"> a. <input type="checkbox"/> Computer Readable Copy b. <input type="checkbox"/> Paper Copy (Identical to computer copy) c. <input type="checkbox"/> Statement verifying identity of above copies 	
2. <input checked="" type="checkbox"/> Specification <i>(preferred arrangement set forth below)</i> <ul style="list-style-type: none"> - Descriptive title of the Invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings <i>(if filed)</i> - Detailed Description - Claim(s) - Abstract of the Disclosure 		ACCOMPANYING APPLICATION PARTS	
3. <input checked="" type="checkbox"/> Drawing(s) [Total Sheets <input type="text" value="4"/>]		8. <input type="checkbox"/> Assignment Papers (cover sheet & document(s))	
4. Oath or Declaration [Total Pages <input type="text" value="10"/>]		9. <input type="checkbox"/> Statement <i>(when there is an assignee)</i> <input type="checkbox"/> Power of Attorney	
a. <input type="checkbox"/> Newly executed (original copy)		10. <input type="checkbox"/> English Translation Document <i>(if applicable)</i>	
b. <input type="checkbox"/> Copy from a prior application (37 C.F.R. § 1.63(d)) <i>(for continuation/divisional with Box 17 completed)</i> <i>[Note Box 5 below]</i>		11. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations	
DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b)		12. <input type="checkbox"/> Preliminary Amendment	
5. Incorporation By Reference <i>(useable if Box 4b is checked)</i> <input type="checkbox"/> The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein		13. <input checked="" type="checkbox"/> <i>(Should be specifically itemized)</i> *Small Entity	
		14. <input type="checkbox"/> Statement(s) <input type="checkbox"/> Statement filed in prior application, (PTO/SB/09-12) <input type="checkbox"/> Status still proper and desired	
		15. <input type="checkbox"/> Certified Copy of Priority Document(s) <i>(if foreign priority is claimed)</i>	
		16. <input type="checkbox"/> Other:	

***NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C. F. R. §1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C. F. R. §1.28).**

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment:

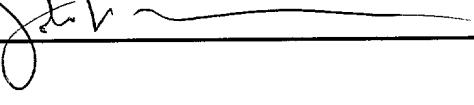
Continuation Divisional Continuation-in-part (CIP) of prior application No.: 8/952,628

Prior application Information: Examiner Tso, L

Group/Art Unit: 2875

18. CORRESPONDENCE ADDRESS

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JC529 U.S. 548862
09/548862
04/13/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)
Paul Andrew Cronk)
)
Serial No.: Not yet assigned) Examiner: Not yet assigned
)
Filed: April 13, 2000)
) Art Unit: Not yet assigned
For: ADJUSTABLE REFLECTOR DE-)
VICE)
)
) Cesari and McKenna, LLP
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April 13, 2000

EXPRESS-MAIL DEPOSIT

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The following papers are being deposited with the United States Postal Service
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- | | |
|--|--|
| <input checked="" type="checkbox"/> Continuation-in-Part Patent Application (10 pages including 11 claims) | <input checked="" type="checkbox"/> Utility Patent Application Transmittal |
| <input checked="" type="checkbox"/> Fee Transmittal Letter | Letter |
| <input checked="" type="checkbox"/> Formal Drawing (4 sheets) | <input checked="" type="checkbox"/> Check in the amount of \$345.00 |
| <input checked="" type="checkbox"/> Preliminary Amendment | |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)
Paul Andrew Cronk)
)
Serial No.: Not yet assigned) Examiner: Not yet assigned
)
Filed: April 13, 2000) Art Unit: Not yet assigned
)
For: ADJUSTABLE REFLECTOR)
DEVICE)
)
) Cesari and McKenna, LLP
) 30 Rowes Wharf
Boston, MA 02110
April 13, 2000

“Express Mail” Mailing-Label Number: EL056798127US

Honorable Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

PRELIMINARY AMENDMENT

In the Specifications:

Page 1, before line 3, insert the following:

Related Application

This application is a continuation-in-part of serial number 08/952,628,
filed March 10, 1998, now patent _____.--

Page 1, line 8, change "industries" to -industries'--;

Page 5, line 6, before "is" insert --there--.

In the Abstract, delete all the identifying numerals and parentheses.

REMARKS

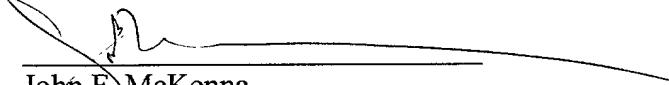
The above amendments address formal matters.

We request consideration on the merits of claims 1 to 11.

Please charge any additional fee occasioned by this paper to our Deposit Account

No. 03-1237.

Respectfully submitted,


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UNITED STATES PATENT APPLICATION

of

Paul Andrew Cronk

for

ADJUSTABLE REFLECTOR DEVICE

- 1 -

SHIELDING DEVICE

Background of the Invention

This invention relates to improvements in devices for reflecting light emitted by artificial
5 sources.

Description of the Prior Art

Modern industries requirements for artificial lighting are extensive, varied, and
constantly expanding.

10

Many types of reflector devices associated with artificial illumination of industrial
spaces are currently known, but these all require that a fixed shape and/or a fixed lamp
mounting position within that shape be precisely specified to create optimal light distribution
for a particular purpose. For example, a 'chinaman hat' reflector might commonly be used in a
15 situation where a wide, uniform spread of light is required. In this case, the spreading of light
is largely dependant on the fixed internal angle of the cone shaped 'chinaman hat' reflector. The
uniformity of light emitted is therefore largely dependant on the non-adjustable lamp
positioning within that reflector. These known devices have the disadvantage that their rigid,
non-adjustable, designs limit their efficient use to a relatively small range of applications.

20

The Applicant's related Australian Serial No. 716550 (and foreign equivalents) relates
to a novel reflector having adjustable curvature, which overcomes such disadvantages of the
prior art.

25

Horizontally mounted lamps coupled with appropriate reflectors, such as defined in the
aforementioned Patent No. 716550, are popular and fulfil industries requirements in most cases,
however, their efficiency is limited. The closer these fittings can be placed to the 'target area'
the better the overall efficiency and the greater the intensity. However, there comes a point
where the intensity and heat of the light beam directly below the lamp (focal hot spot) limits
30 closer placement. In these conditions, addition of a 'heat shield' (as outlined below) can help

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redistribute excess light and heat from the 'hot spot' to other areas below the reflector, dramatically increasing uniformity, functionality and efficiency in these extreme applications. This heat shield is superior to prior art because it relies only on direct reflection toward a target area below the lighting fixture. It does not reflect substantial quantities of radiation back 5 towards the lamp and reflector for (inefficient) re-reflection. Hence, the function of the heat shield is totally separable from that of the reflector it is coupled with, not limiting it to use in conjunction with any specific reflector design.

Summary of the Invention

10 The present invention seeks to provide an adjustable reflecting device which overcomes the disadvantages of the prior art.

In one broad form, the present invention provides a shielding device adapted to be disposed about at least part of a lighting means, said device being substantially V-shaped and 15 perforated.

Preferably, said device is adapted to be attached to a lamp socket or lamp bracket of said lighting means.

20 Preferably, said device is positioned on the opposed side of said lighting means relative to a reflector device associated with said lighting means.

In a preferred form, said shielding device acts to at least partly deflect heat and/or light emitted from said lighting device, to thereby control the amount and lateral spread of 25 radiation emitted directly from said lighting means.

In a preferred embodiment, the nature and/or extent of perforation of said shielding device is predetermined to control the amount of radiation deflected by said shielding device.

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Preferably, said perforations are embodied in a patterned manner, such as in rows or the like.

In a preferred form, radiation deflected from said device is transmitted away from said
5 reflector device.

Preferably, said reflector device has adjustable curvature.

Also preferably, said reflector device has a double parabolic shape.

10

In a preferred embodiment, the ends of the device are shaped such that the overall shape of the device is 'house roof' shaped.

In a further board form, the present invention provides a method of controlling the
15 nature and/or extent of radiation emitted from a lighting source, by using a shielding device as hereinbefore defined.

Brief Description of the Drawings

The present invention will become more fully understood from the following description
20 of a preferred but non-limiting embodiment thereof, described in connection with the accompanying drawings, wherein:

FIG. 1 shows a preferred embodiment of the shielding device in accordance with the present invention;

FIG. 2 shows an alternatively preferred embodiment of the shielding device of the
25 invention;

FIG. 3 shows an exploded view of one example of an adjustable reflector device used in conjunction with the shielding device of the present invention;

FIG. 4 shows a disassembled view of the skin of the reflector device of FIG. 3, depicting the transversely protruding skirts, present on sheet members;

30 FIG. 5 shows an assembled view of the skin of the reflector device of FIG. 3 prior to

flexing, depicting the transverse alignment of sheet members;

FIG. 6 illustrates the incident and reflected electromagnetic radiation when a double-parabolic reflector is used without a shielding device; and,

FIG. 7 illustrates a similar depiction to that of FIG. 6, but when a shielding device, in accordance with the present invention is used.

Detailed Description of the Preferred Embodiment(s)

Throughout the drawings, like numerals will be utilised to represent similar features, except where expressly otherwise indicated.

10

Also, throughout the specification, the term "a double parabolic" is utilised to describe the shape of a reflector device when it is in its flexed position, and retained against the bias of its normal resilience, as for example, shown in Fig. 3 of the drawings. In considering this definition, it should be appreciated that any size, shape or width of double parabolic or similar 15 shape should be considered to fall within the scope of this definition.

The present invention provides a shielding device, which is substantially V-shaped and perforated, and which is used in association with a reflector device. A preferred arrangement of a reflector device which may be used, is adjustable light reflector device having a resilient reflective skin, flexed to form a double parabolic shape, which is held in place against its resiliency by adjustable retainers located at each end of the skin and an independently adjustable lamp mount which attaches to the skin when it is in the retained position.

Referring to FIG. 1, there is shown a shielding device 17, which is generally V-shaped. 25 which may be attached to a lamp fitting or lamp socket by means of an attachment means 28. The attachment means 28 is shown embodied as a cylindrical sleeve, which may be secured by a grub screw 19 to the lamp fitting or lamp socket. An arm 29 connects the attachment means 28 to the shielding device 18. The shielding device 17 is provided with perforations 30, which will allow the transmission of some radiant emissions therethrough, whilst other radiant 30 emissions will be reflected by the surface of the shielding device, as will be further detailed.

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hereinafter. The sizing, spacing, patterning, etc., of the perforations will control the amount of radiation which is transmitted past the device 17, through the perforations 30, and that which is reflected by the device 18, and can thus be predetermined depending upon the amount of radiation required according to the application, the type of reflector used, etc.

5

Referring to Fig. 2, is shown an alternative, but also preferred, embodiment of the invention. In the embodiment of Fig. 2, the reflector may also be described as V-shaped, but it's ends are also pitched, somewhat resembling a 'house-roof' shape. The shielding device 17 of Fig. 2 will disperse light and heat in four directions from the 'hot spot'. That is, the radiation 10 will be reflected left, right, forward and behind the emission source, such as exemplified in Figs. 8(a) to 8(b), which will be described hereinafter. The embodiment of Fig. 2 also shows an alternative embodiment of an attachment means 28, in this case, the attachment means 28 includes a bolt-on-bracket arrangement.

15 Referring to FIG. 3 it can be seen that a preferred embodiment of adjustable reflector device used in conjunction with the shielding device of this invention includes a two piece resilient skin formed by two members 1 and 2, having a protruding skirt parallel with the longest edge thereof. The sheet members are substantially rectangularly shaped sheet, detachably joined about a spine portion 3 then flexed back against its normal resilience to 20 produce a double parabolic shape, as shown, such that one edge and associated skirt of one sheet member fits neatly inside the corresponding skirt and edge of the other. The sheets are then fixed together and flexed back to achieve a curved shape, such as a double-parabolic shape. The skin may be made of any suitable material such as colour bonded metal, metal, fibreglass, or plastic. The pair of sheet members could be integrally manufactured in a one piece construction 25 - as opposed to being separately formed. These sheets are adjustably secured by a pair of chain 4 and hook 5 retainers (only one retainer shown because of orientation). The retaining means may be a chain, wire or like means, optionally adjustable in length. A pair of threaded bolts 6 and 7 pass down through holes 8 and 9 in the top of the assembled skin and are secured by nuts 10 and 11.

30

- 6 -

A lamp mount 12 attaches to bolts 6 and 7 through holes 13 and 14 and is adjustably secured by attaching nuts 15 and 16. The lamp mount comprises a sliding plate that adjusts along a pair of threaded bolts which pass through holes in the skin. Nuts are used to secure bolts to the skin and to provide a means of adjustment for the sliding plate. The luminair mount may 5 be designed in any fashion, adjustable or non-adjustable, so long as it does not substantially inhibit flexibility of the skin when attached thereto.

The V-shaped perforated heat shield 17 slides onto the lamp fitting 18 and is secured to the underside thereof by a grub screw 19. The heat shield is preferably provided about at least 10 part of the element or filament portion of the lighting means, and is attached via a slender arm, to a piece of cylindrical tube which slides onto the lamp fitting and is secured with a grub screw. The heat shield may be perforated with any number of holes of any size or shape so long as it is substantially V-shaped. It may attach to the lamp fitting by any method capable of securing the shield parallel to the under side of the lamp. Folds at 20 and 21 produce rigidity and 15 strength in the flexed and retained skin. The resilient reflective skin may comprise one or any number of sheet members and any necessary reinforcing members fashioned so as to approximate the predefined shape and conditions required for formation of a flexible double parabolic shape as herein defined.

20 Referring to FIG. 4 it can be seen that sheet members 1 and 2 which form the skin, each have two folds 20, 22 and 21, 23 which create associated skirts 24, 25 and 26, 27.

Referring to FIG. 5 it can be seen how sheet members 1 and 2 are joined at a transverse angle. Skirts 27 and 25 attached to the bodies of sheet members 1 and 2 to create a reinforced 25 joint about the newly created spine 3.

By appropriate adjustment of the reflective device described above, many and varied desirable conditions of artificial illumination may be achieved. Hence the need to employ more than one reflective device to efficiently service a range of discrete tasks may be reduced or 30 abolished.

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It will be realised that the reflector device according to this invention is not restricted to the specific shape and construction of the resilient skin shown in the example, but may use a skin fashioned from one, two, or more pieces of suitable material of any suitable shape or size so long as the essential feature of being flexed back against a spine or axial crease to create an 5 adjustable double parabolic shape or other similar shape is achieved.

Referring to Fig. 6, a double-parabolic shaped reflector device is shown in cross-section, to illustrate the incident and reflected radiation associated with such a reflector from a light source positioned thereunder. Incident light I is shown being transmitted from the light source. 10 Some of this incident light travels towards the reflector and is reflected as reflected light R, according to the general principle that the Angle of Reflection equals the Angle of Incidence. The double parabolic shaped reflector shown in Fig. 6 is a special shape so far as reflection is concerned, in that it does not reflect any heat or light back towards the light source or bulb, or create any 'left to right' or 'right to left' cross reflection, which is very inefficient.

15 Fig. 7 illustrates a diagram similar to that of Fig. 6, but in which a shielding device 17 in accordance with the present invention is used. In the illustrated arrangement, incident light passing through the shielding device 17 is represented as I_h , whilst light reflected by the shielding device is represented as R_h . Using the double parabolic shaped reflector, as shown in 20 Fig. 7, in conjunction with the heat shield 18, cannot produce any re-reflection of any substantial quantity. It is considered that re-reflection would still be minimal in the event that a non-parabolic reflector is used.

It will be appreciated by persons skilled in the art that variations and modifications may 25 be made to the shielding device of the present invention, whilst still achieving the functional advantages of the described embodiments. As such, variations to the shape, the nature and extent of the perforations, the means of attachment, etc., should all be considered to fall within the scope of the invention as hereinbefore described and as hereafter claimed.

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THE CLAIMS

1. A shielding device adapted to be disposed about at least part of a lighting means, said device being substantially V-shaped and perforated.
- 5 2. A shielding device as claimed in claim 1, wherein said device is adapted to be attached to a lamp socket or lamp bracket of said lighting means.
3. A shielding device as claimed in claim 1, wherein said device is positioned on the opposed side of said lighting means relative to a reflector device associated with said lighting
10 means.
4. A shielding device as claimed in claim 1, wherein said shielding device acts to at least partly deflect heat and/or light emitted from said lighting device, to thereby control the amount and lateral spread of radiation emitted directly from said lighting means.
15
5. A shielding device as claimed in claim 4, wherein the nature and/or extent of perforation of said shielding device is predetermined to control the amount of radiation deflected by said shielding device.
20 6. A shielding device as claimed in claim 1, wherein said perforations are embodied in a patterned manner, such as in rows or the like.
7. A shielding device as claimed in claim 4, wherein radiation deflected from said device is transmitted away from said reflector device in a broad pattern largely independent of the
25 shape of said device.
8. A shielding device as claimed in claim 4, wherein said reflector device has adjustable curvature.

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9. A shielding device as claimed in claim 4, wherein said reflector device has a double parabolic shape.

10. A shielding device as claimed in claim 1, wherein the ends of the device are shaped
5 such that the overall shape of the device is 'house roof' shaped.

11. A method of controlling the nature and/or extent of radiation emitted from a lighting source, by using a shielding device as claimed in claim 1.

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ABSTRACT

An adjustable reflector device is disclosed. The device consists of an adjustable double parabolic reflective skin (1,2) with an adjustable lamp mount (12), incorporating a V-shaped
5 perforated heat shield (17), attached. The two part reflective skin (1,2) forms a double parabolic shape when flexed back against a reinforced spine(3). This flexible shape is secured by lengthwise adjustable chain retainers (4) attached a both ends of the skin (1,2). The lamp mount (12) slides onto a pair of threaded bolts (6,7) secured to the skin and adjustment is achieved by tightening or loosening the appropriate nuts (15,16). The heat shield (17) slides onto the lamp
10 fitting (18) and is positioned appropriately to deflect incident heat and light. This device can be used to provide variable conditions of artificial illumination.

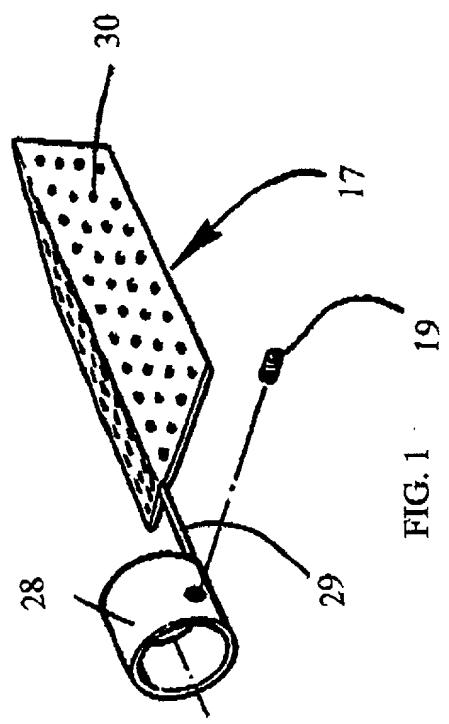


FIG. 1 19

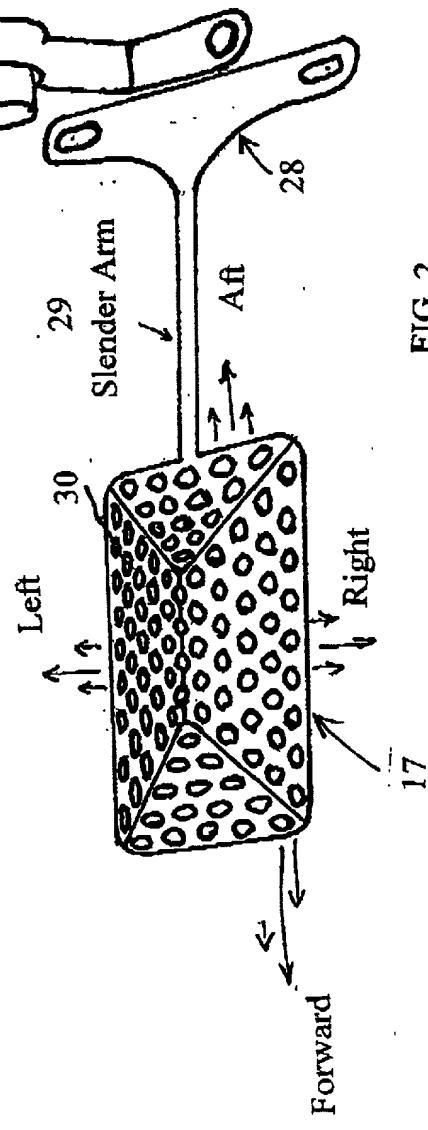


FIG. 2

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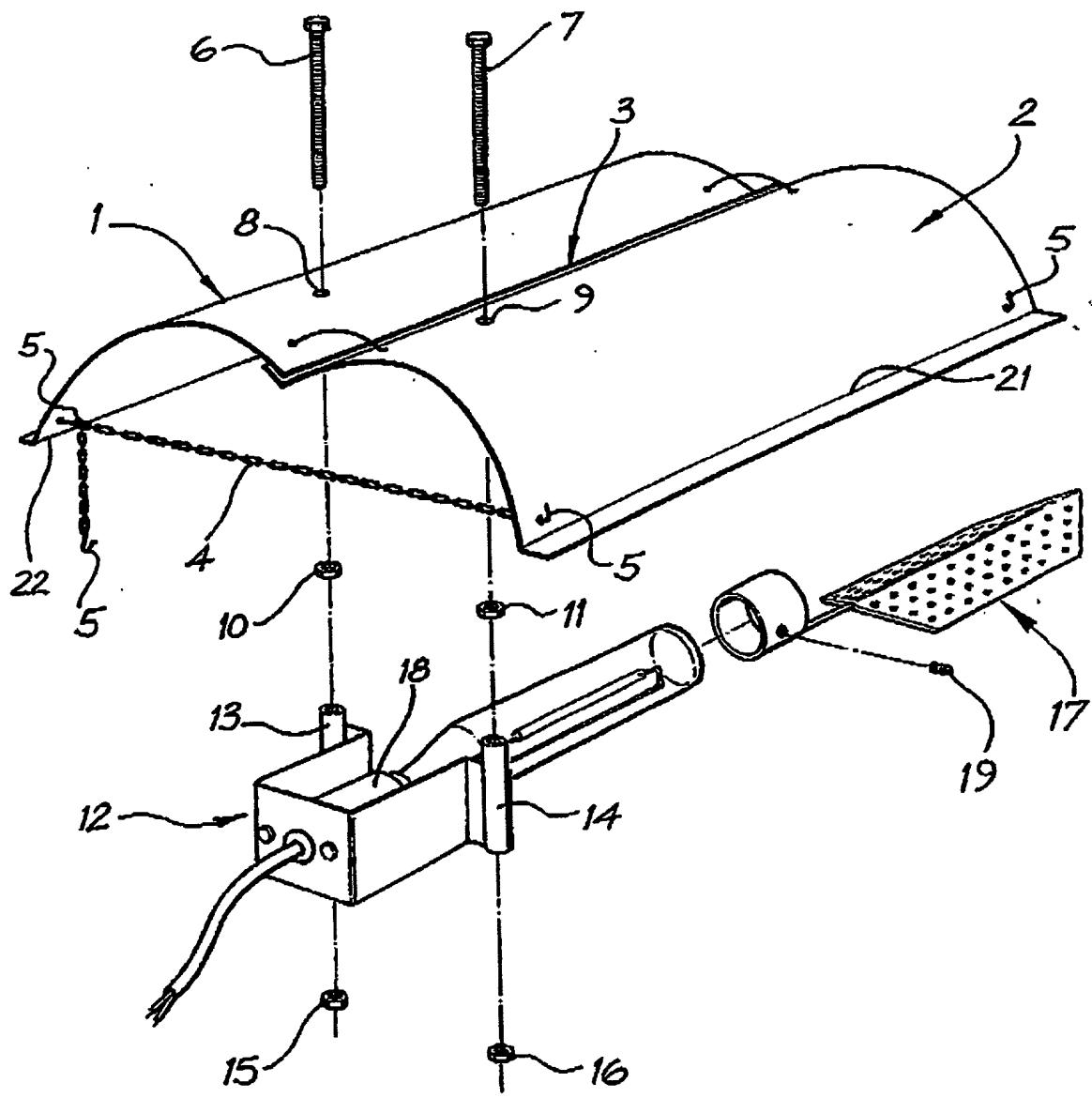


FIG. 3

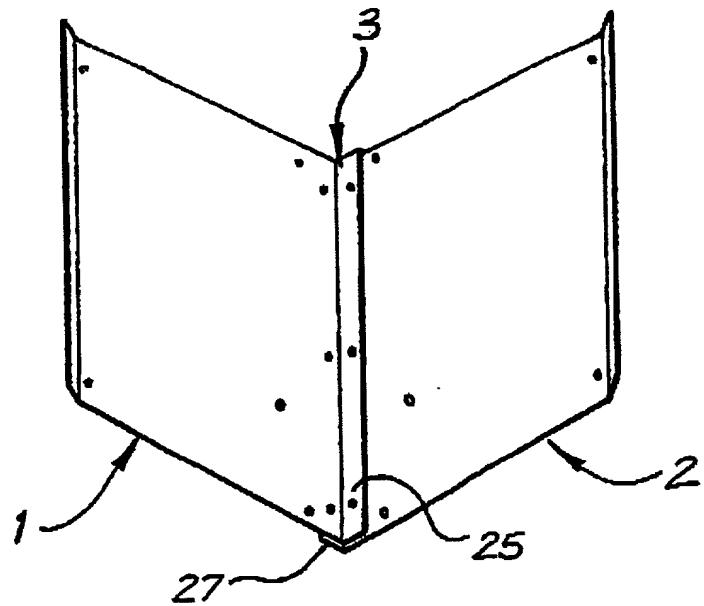
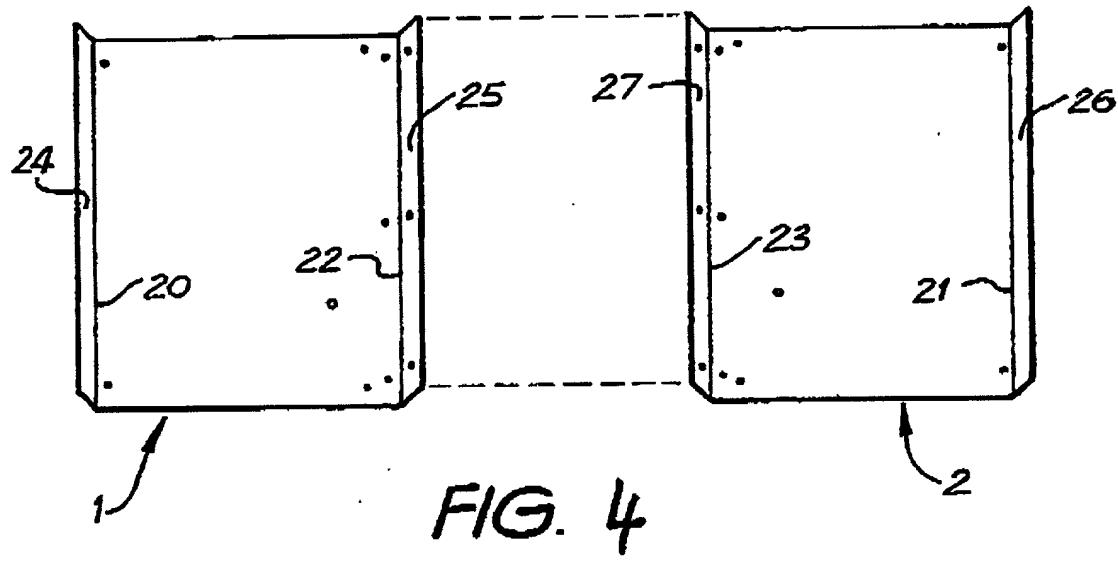
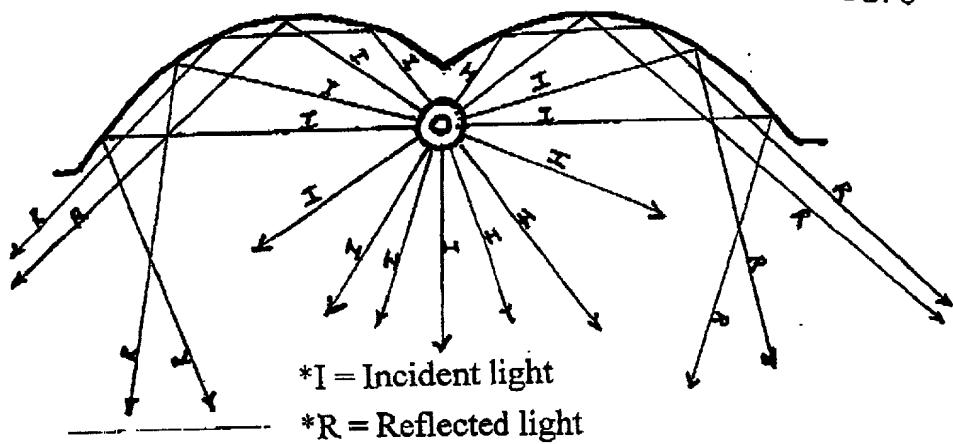


FIG. 5

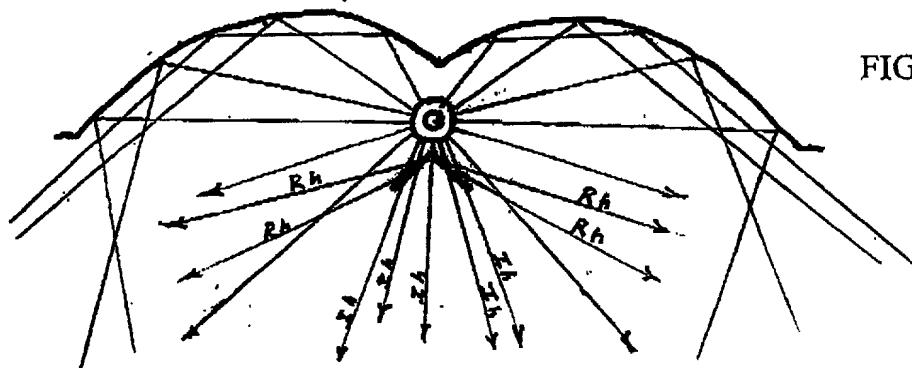
Cross Section

FIG. 6



Cross Section

FIG. 7



*I = Incident light passing
through heat shield perforations
*R = Reflected light by the heat shield